abdominal organs, it is also possible to assess the consistency of masses if proper attention is paid to gain settings of the instrument.

The liver, gallbladder, pancreas, spleen, kidneys, and aorta have all been demonstrated in both normal and pathological states. Since the technique is totally non-invasive, it may be repeated serially, thereby providing information concerning the natural course of many disorders that have previously required more complicated radiologic procedures of greater risk.

The two-dimensional representation of anatomy also provides excellent positional information for biopsy or puncture of visualized abnormalities (for example, renal tumors and cysts). This positional information is likewise important in the placement of radiotherapy ports and subsequent reduction in port sizes as the tumor regresses.

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Bone Scanning in the Pre-treatment and Follow-up of Malignant Disease

Radionuclide bone scanning appears to constitute the most sensitive method of evaluating early metastasis to bone. In numerous series, including almost every common type of primary tumor, the bone scan was of great value in demonstrating early metastasis in a surprising number of cases in which neither bone pain nor x-ray evidence for metastasis was present. Strontium-85 has been generally replaced by short half-lived isotopes Strontium-87m and Fluorine-18 as the radionuclide of choice for bone scans.

Bone scans are used in many centers as a routine preoperative screening test in cases of carcinoma of the breast. Demonstration of an otherwise unrecognized metastasis may alter the surgeon's choice of operation.

In addition to tumor, other abnormalities of bone, including osteomyelitis, fracture, periosteal reaction, and many other benign and malignant conditions can cause localized tracer uptake on the bone scan. Correlation with x-ray will usually exclude these other conditions as the cause of abnormality on the scan.

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Radiation Dosage and the "Rad Equivalent Therapy"

To many, the roentgen, the unit of given dose in air, and the rad, the absorbed dose, have always been somewhat confusing. At first glance, therefore, the introduction of another unit, in this case the concept of the RET (rad equivalent therapy), would only seem to add to the confusion. However, with treatments given over varying periods of time, a unit to combine the daily dose, the number of fractions and the total time was desirable.

A correlation of these factors had been represented graphically by Strandqvist, and for the skin by a time-dose formula by von Essen, but the recently published formulated "slide-rule" introducing the RET, as a "nominal standard dose" unit (Winston et al) has been fairly rapidly accepted. It is usual to calculate one's standard RET dose for a particular tumor based in a normal treatment regime, and from this an alternative fractionation pattern is simply calculated. Although yet to be fully proven both in theory and practice, it does enable one to vary the treatment regime within certain limits to suit the patient, while at the same time brings the dose up to a level that each radiotherapist considers to be curative and yet within tissue tolerance.

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